

Yellowtail Dam Water Supply and Projected Operations



— BUREAU OF —
RECLAMATION

October 2020



Bighorn River Basin Map Source: DEMIS Mapserver

October Operating Range			
Forecast	Minimum	Median	Maximum
Monthly Average Inflow (cfs)	2,150	2,410	2,775
Monthly Average River Release (cfs)	2,215	2,215	2,215
End of October Elevation (feet)	3632.5	3634.2	3636.3
October 2020 Inflow Forecast			
October Volume			148
Percent of Average			89
Water Year	Historic Inflow (kaf)		Rank
2020	202		17
2019	175		29
2018	278		3
2017	203		16
30 Year Average	166		

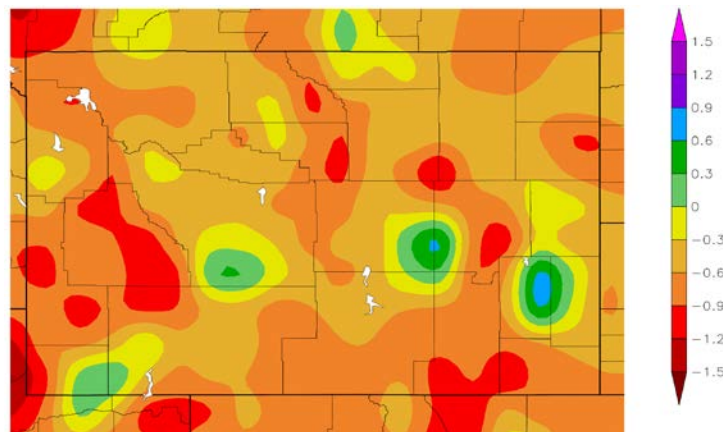


Climate Departure from Normal

September 1 through September 30, 2020

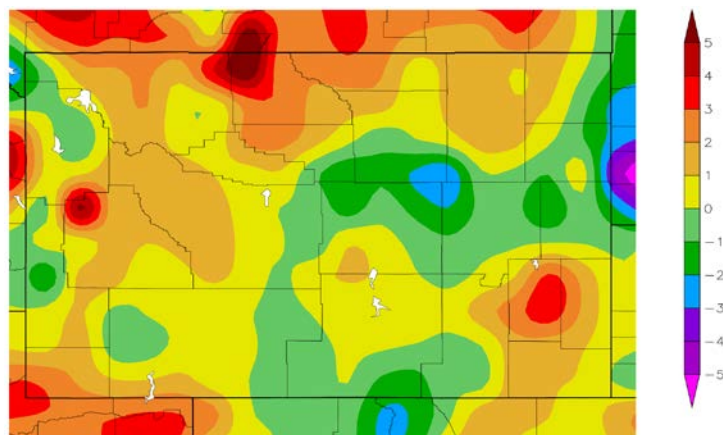
Precipitation

Departure from Normal (inches)



Temperature

Departure from Normal (°F)



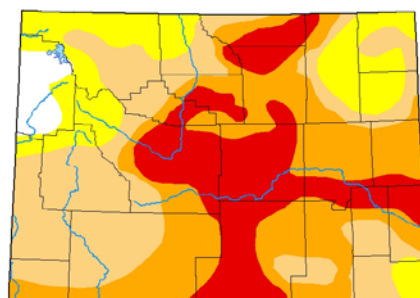
HPRCC using provisional data from NOAA Regional Climate Centers

CLIMATE SUMMARY

The climate in the Bighorn Basin above Yellowtail Dam was drier and warmer than average during September.

The climate outlook for October shows there is a 40-50 percent chance that precipitation will continue to be below average and a 60-70 percent chance temperatures will be above average.

U.S. Drought Monitor Wyoming



September 29, 2020
(Released Thursday, Oct. 1, 2020)
Valid 8 a.m. EDT

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

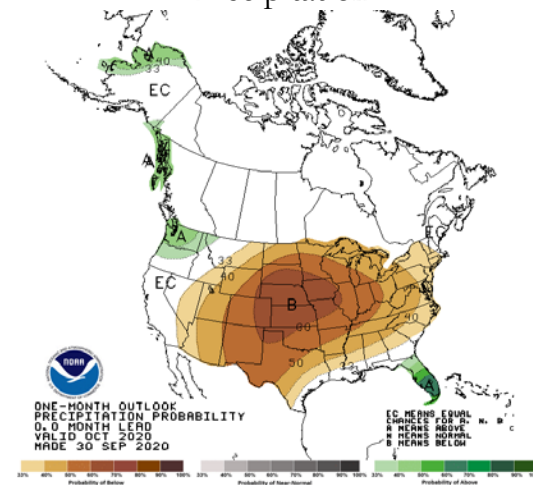
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <http://droughtmonitor.unl.edu/about.aspx>.

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U.S. Department of Agriculture

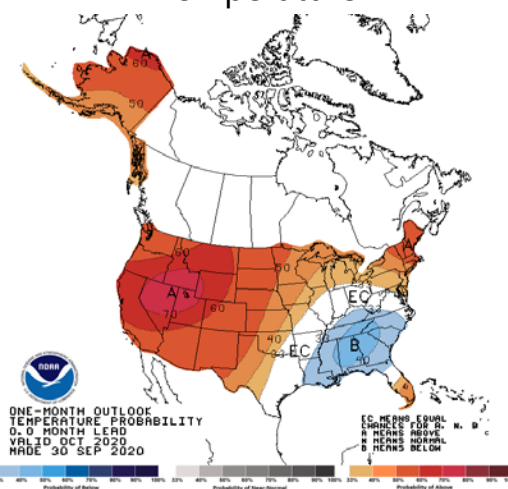
USDA
BOMC
NOAA
droughtmonitor.unl.edu

October Climate Outlook

Precipitation

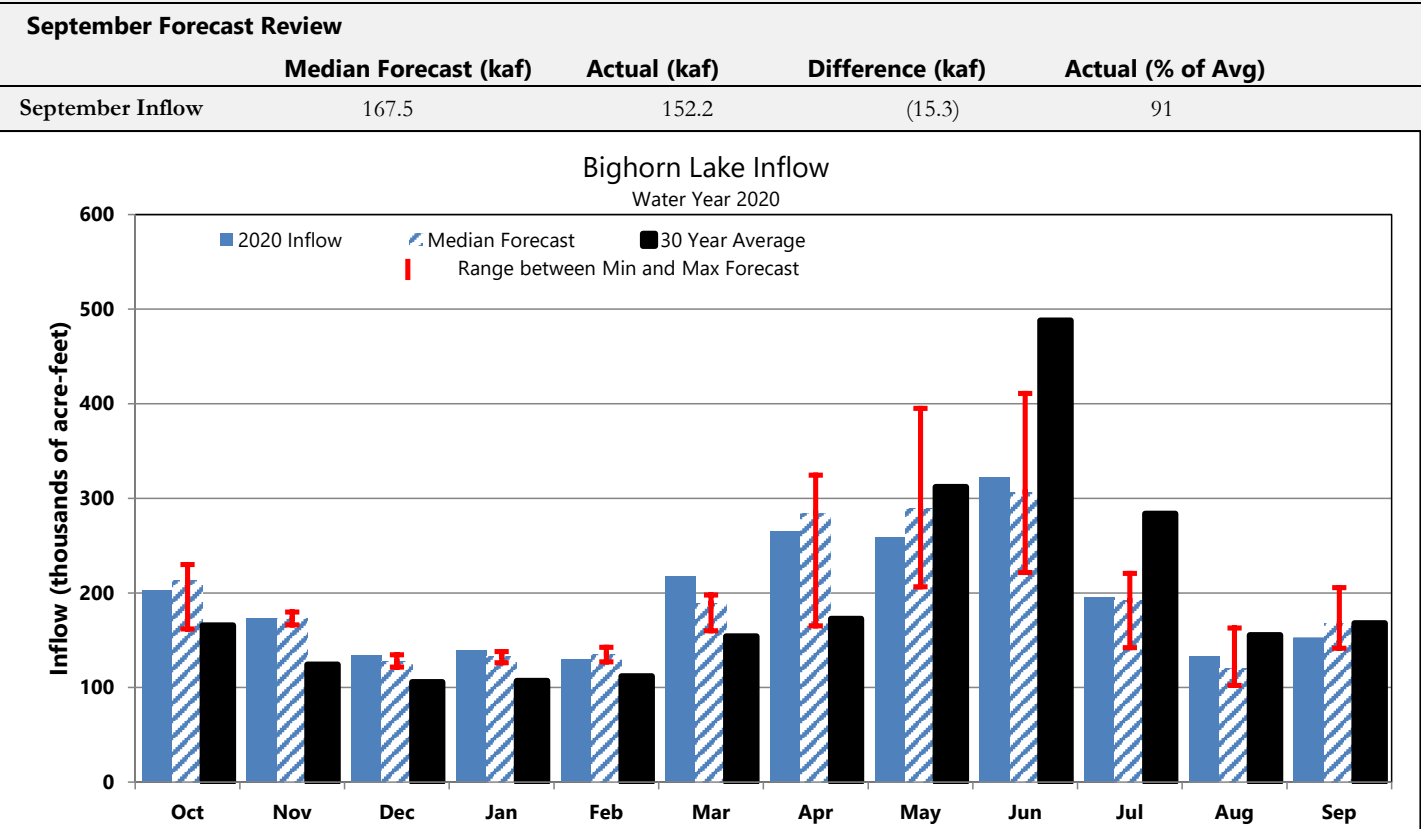


Temperature



FORECAST SUMMARY

SNOTEL data, streamflow data and planned releases from Boysen and Buffalo Bill Reservoirs are used to compute an inflow forecast for Bighorn Lake.



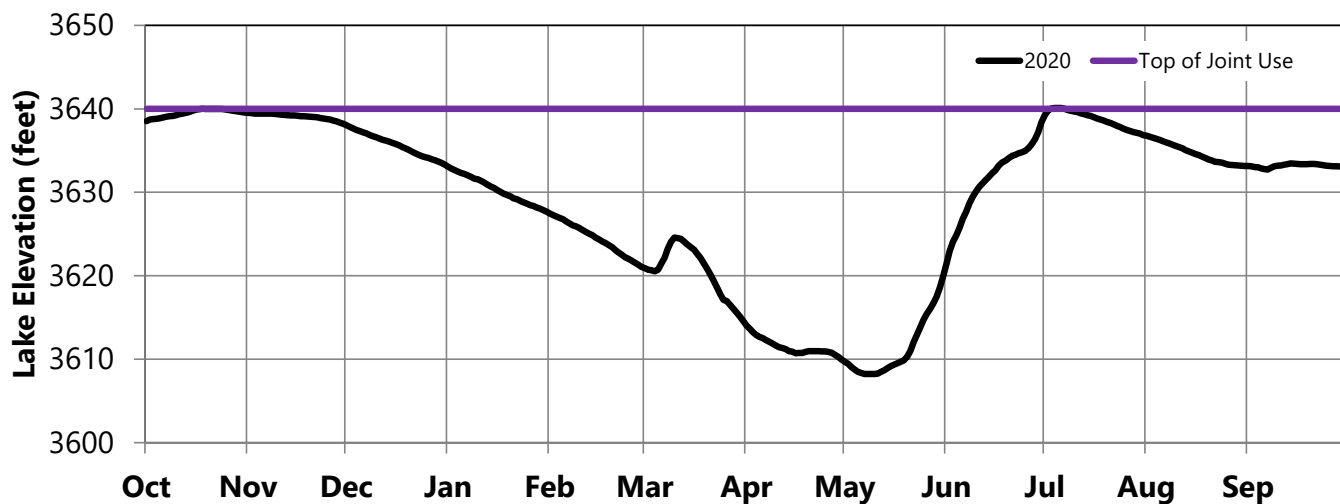
OPERATIONS REVIEW (October 1, 2019 through September 30, 2020)

River releases remained at 2,400 cfs during September. Storage in Bighorn Lake decreased by 0.1 feet or 1,100 AF during September.

October 1 Storage Conditions

	Elevation feet	Storage acre-feet	Percent of Average	Percent Full
Bighorn Lake	3633.1	940,905	105	92
Buffalo Bill	5367.5	450,099	99	70
Boysen	4715.4	571,249	98	77

Bighorn Lake Operations Water Year 2020



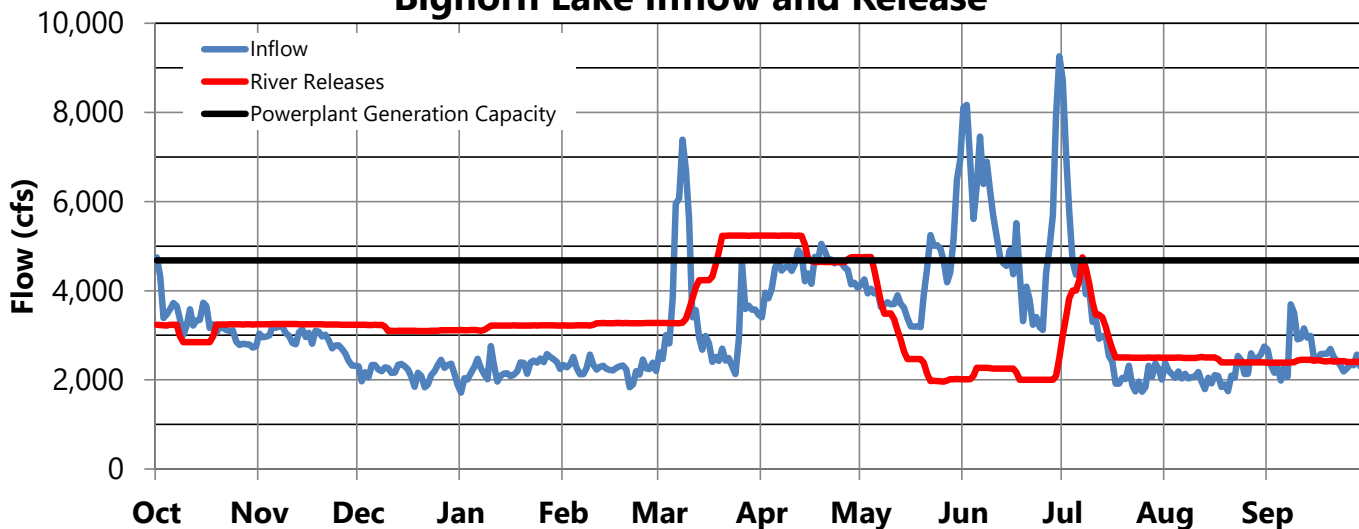
Average September Release

	Monthly Avg cfs	Percent of Average
Bighorn River	2,410	94
Buffalo Bill Total Release	1,550	105
Boysen Release	970	88

Average September Inflow

	Monthly Avg cfs	Percent of Average
Bighorn Lake	2,560	91
Buffalo Bill	350	80
Boysen	620	78

Bighorn Lake Inflow and Release



OPERATIONS OUTLOOK (October 1, 2020 through March 31, 2021)

River releases are expected to decrease to 2,100 cfs during October under median inflow conditions. In accordance with the operating criteria, releases from Yellowtail Dam are adjusted as needed based on actual and revised forecasted inflows to stay on track with the October 31 elevation target (3635-3640 feet) as long as river releases can be maintained at 2,500 cfs or more. If river releases can not be maintained at 2,500 cfs or more while using the end of October elevation target, river releases are adjusted to the approximate expected winter release using the March 31 target of 3617 feet.

Median Inflow Conditions

	Oct	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	725	600	600	600	600	600
Buffalo Bill Release (cfs)	696	205	205	205	205	205
Tributary Gain (cfs)	990	864	543	615	789	1,010
Monthly Inflow (cfs)	2,411	1,669	1,348	1,420	1,594	1,815
Monthly Inflow (kaf)	148.3	99.3	82.9	87.3	88.5	111.6
Monthly Release (kaf)	140.0	125.0	129.1	129.1	116.6	152.1
Afterbay Release (cfs)	2,277	2,100	2,100	2,100	2,100	2,474
River Release (cfs)	2,216	2,100	2,100	2,100	2,100	2,474
End-of-Month Content (kaf)	939.4	918.0	876.0	838.5	814.3	778.1
End-of-Month Elevation (feet)	3634.2	3632.2	3627.7	3623.1	3619.7	3614.0

Minimum Inflow Conditions

	Oct	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	725	600	600	600	600	600
Buffalo Bill Release (cfs)	696	205	205	205	205	205
Tributary Gain (cfs)	729	857	537	608	780	1,002
Monthly Inflow (cfs)	2,150	1,662	1,342	1,413	1,585	1,807
Monthly Inflow (kaf)	132.2	98.9	82.5	86.9	88.0	111.1
Monthly Release (kaf)	142.1	121.4	125.4	125.4	113.3	125.5
Afterbay Release (cfs)	2,310	2,040	2,040	2,040	2,040	2,040
River Release (cfs)	2,216	2,040	2,040	2,040	2,040	2,040
End-of-Month Content (kaf)	921.3	902.9	864.3	830.1	808.7	798.6
End-of-Month Elevation (feet)	3632.5	3630.7	3626.4	3621.9	3618.8	3617.3

Maximum Inflow Conditions

	Oct	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	725	600	600	600	600	1,499
Buffalo Bill Release (cfs)	696	205	205	205	600	1,499
Tributary Gain (cfs)	1,352	874	551	623	799	1,020
Monthly Inflow (cfs)	2,773	1,679	1,356	1,428	1,604	2,724
Monthly Inflow (kaf)	170.5	99.9	83.4	87.8	89.1	167.5
Monthly Release (kaf)	138.5	130.3	134.7	134.7	138.8	221.2
Afterbay Release (cfs)	2,252	2,190	2,190	2,190	2,500	3,597
River Release (cfs)	2,216	2,190	2,190	2,190	2,500	3,597
End-of-Month Content (kaf)	963.1	936.9	889.9	847.4	801.5	752.1
End-of-Month Elevation (feet)	3636.3	3634.0	3629.3	3624.2	3617.7	3609.4

OPERATIONS OUTLOOK (October 1, 2020 through March 31, 2021)

There is approximately 70 cfs of gain between Yellowtail Dam and Yellowtail Afterbay Dam from spring flowing into Yellowtail Afterbay. Total release from Yellowtail Dam is 70 cfs less than total release from Yellowtail Afterbay Dam. Yellowtail Powerplant is limited to 3 units due to on-going refurbishment project.

Irrigation Demands Outlook

Bighorn Canal (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar
Median Forecast	60	0	0	0	0	0
Minimum Forecast	94	0	0	0	0	0
Maximum Forecast	36	0	0	0	0	0

Power Generation Outlook

Current Number of Units Available: 3 of 4

Approximate Yellowtail Powerplant Turbine Capacity: 6,150 cfs

Approximate Yellowtail Powerplant Generation Limit: 4,615 cfs

Yellowtail Powerplant Release (cfs)

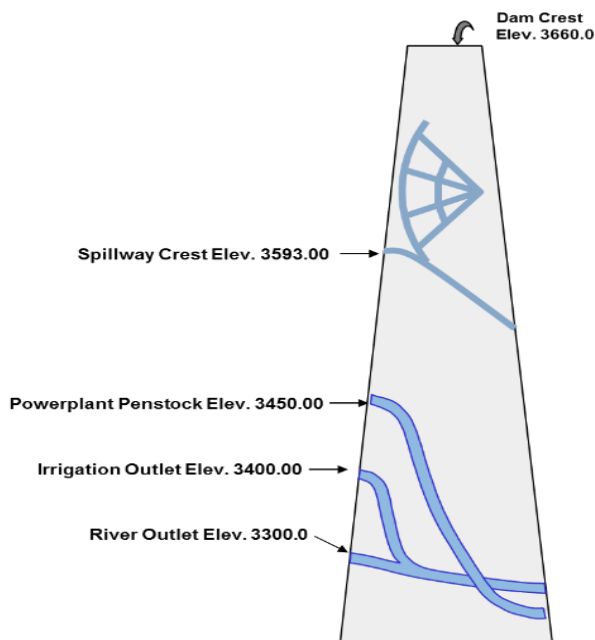
	Oct	Nov	Dec	Jan	Feb	Mar
Median Forecast	2,207	2,030	2,030	2,030	2,030	2,404
Minimum Forecast	2,240	1,970	1,970	1,970	1,970	1,970
Maximum Forecast	2,182	2,120	2,120	2,120	2,430	3,527

Yellowtail Powerplant Generation (gwh)

	Oct	Nov	Dec	Jan	Feb	Mar
Median Forecast	54.4	48.1	49.4	48.9	43.7	57.5
Minimum Forecast	55.1	46.6	47.9	47.4	42.4	46.6
Maximum Forecast	53.8	50.3	51.6	51.1	53.1	83.2

Yellowtail Spill (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar
Median Forecast	0	0	0	0	0	0
Minimum Forecast	0	0	0	0	0	0
Maximum Forecast	0	0	0	0	0	0



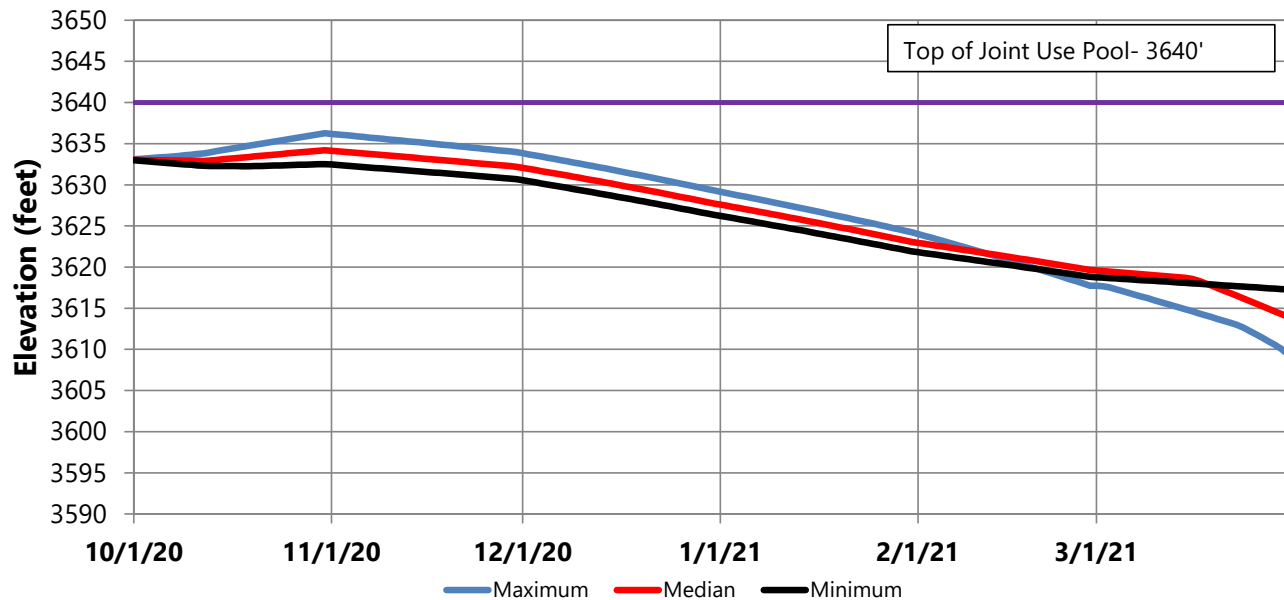
Release Outlook by Outlet

All releases are currently going through the powerplant and are expected to go through the powerplant through the end of March.

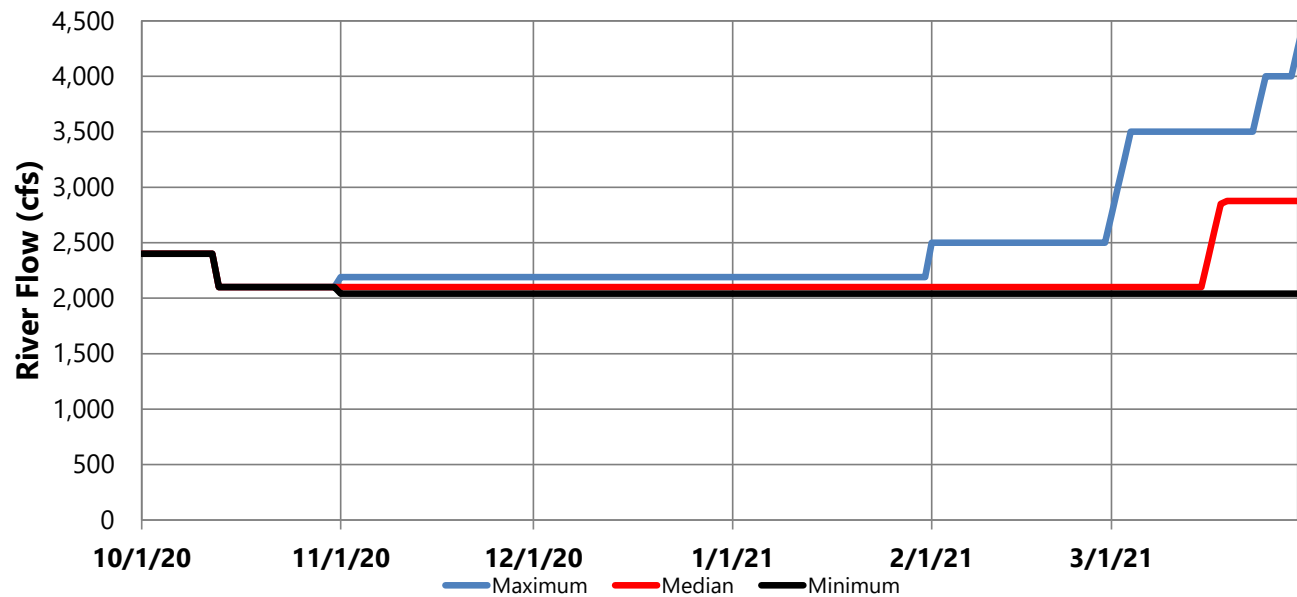
OPERATIONS OUTLOOK (October 1, 2020 through March 31, 2021)

Projected elevations and the range of river releases are based on the median, minimum, and maximum inflow forecasts. End-of-month elevations and river releases vary based on the difference between forecasted inflow scenarios.

Bighorn Lake Elevation



River Release



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Monthly Operating Plans, Current Conditions, Snowpack and Other Water Management Information
https://www.usbr.gov/en/lakes/reservoirs/warents/main_menu.html